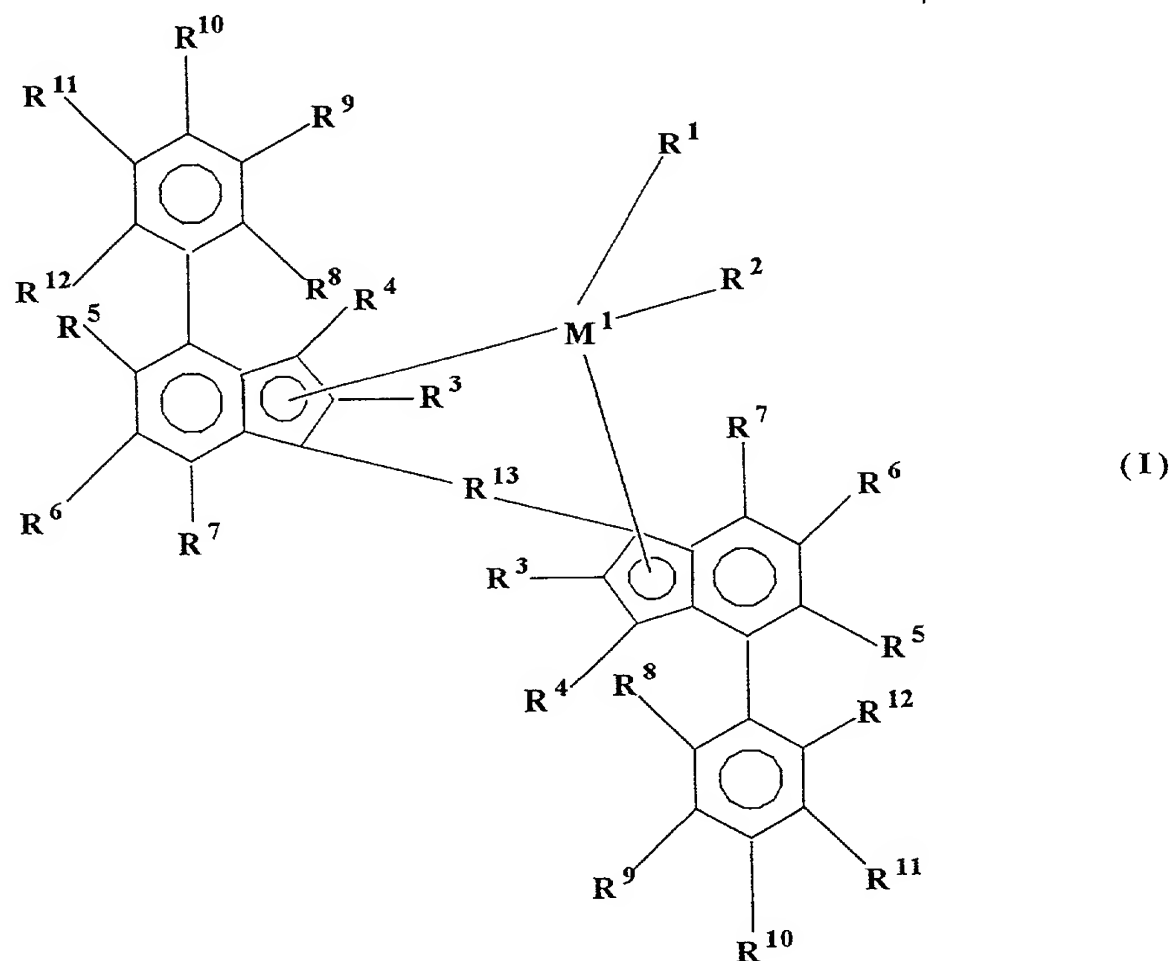


We claim:

Claim 1. A compound represented by the formula:



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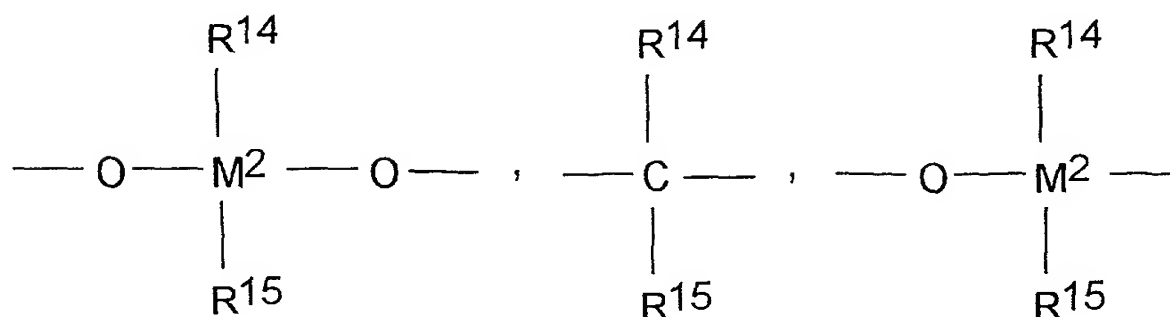
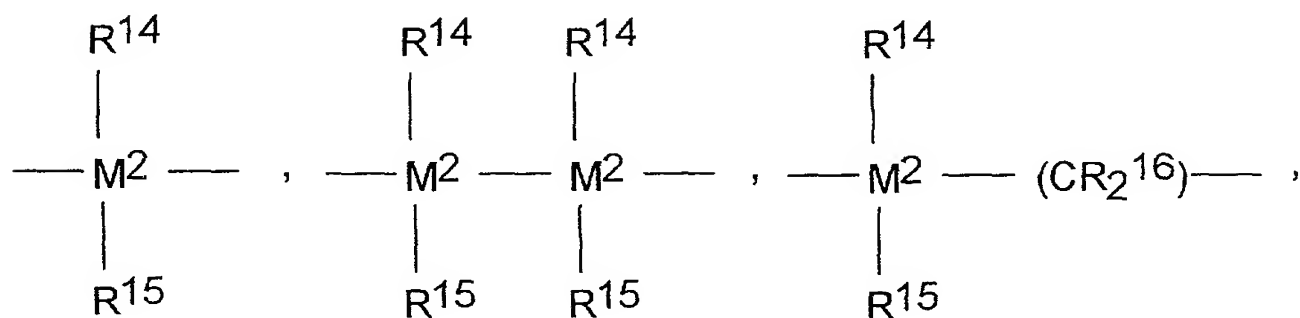
wherein:  $M^1$  is selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum and tungsten;

$R^1$  and  $R^2$  are identical or different, and are one of a hydrogen atom, a  $C_1$ - $C_{10}$  alkyl group, a  $C_1$ - $C_{10}$  alkoxy group, a  $C_6$ - $C_{10}$  aryl group, a  $C_6$ - $C_{10}$  aryloxy group, a  $C_2$ - $C_{10}$  alkenyl group, a  $C_2$ - $C_{40}$  alkenyl group, a  $C_7$ - $C_{40}$  arylalkyl group, a  $C_7$ - $C_{40}$  alkylaryl group, a  $C_8$ - $C_{40}$  arylalkenyl group, an OH group or a halogen atom, or a conjugated diene which is optionally substituted with one or more hydrocarbyl, tri(hydrocarbyl)silyl groups or hydrocarbyl, tri(hydrocarbyl)silylhydrocarbyl groups, said diene having up to 30 atoms not counting hydrogen;

$R^3$  are identical or different and are each a hydrogen atom, a halogen atom, a  $C_1$ - $C_{10}$  alkyl group which may be halogenated, a  $C_6$ - $C_{10}$  aryl group which may be halogenated, a  $C_2$ - $C_{10}$  alkenyl group, a  $C_7$ - $C_{40}$  -arylalkyl group, a  $C_7$ - $C_{40}$  alkylaryl group, a  $C_8$ - $C_{40}$  arylalkenyl group, a  $-NR'^2$ ,  $-SR'$ ,  $-OR'$ ,  $-OSiR'_3$  or  $-PR'_2$  radical, wherein  $R'$  is one of a halogen atom, a  $C_1$ - $C_{10}$  alkyl group, or a  $C_6$ - $C_{10}$  aryl group;

$R^4$  to  $R^7$  are identical or different and are hydrogen, as defined for  $R^3$  or two or more adjacent radicals  $R^5$  to  $R^7$  together with the atoms connecting them form one or more rings;

10

 $R^{13}$  is

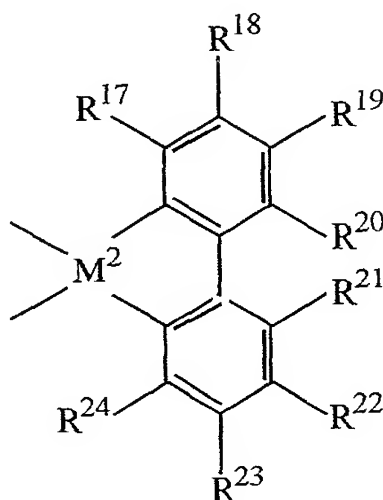
$-B(R^{14})-$ ,  $-Al(R^{14})-$ ,  $-Ge-$ ,  $-Sn-$ ,  $-O-$ ,  $-S-$ ,  $-SO-$ ,  $-SO_2-$ ,  $-N(R^{14})-$ ,  $-CO-$ ,  $-P(R^{14})-$ , or  $-P(O)(R^{14})-$ , or an amidoborane radical;

15

wherein:  $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are identical or different and are a hydrogen atom, a halogen atom, a  $C_1$ - $C_{20}$  alkyl group, a  $C_1$ - $C_{20}$  fluoroalkyl or silaalkyl group, a  $C_6$ - $C_{30}$  aryl group, a  $C_6$ - $C_{30}$  fluoroaryl group, a  $C_1$ - $C_{20}$  alkoxy group, a  $C_2$ - $C_{20}$  alkenyl group, a  $C_7$ - $C_{40}$  arylalkyl group, a  $C_8$ - $C_{40}$  arylalkenyl group,

a C<sub>7</sub>-C<sub>40</sub> alkylaryl group, or R<sup>14</sup> and R<sup>15</sup>, together with the atoms binding them, form a cyclic ring;

or, R<sup>13</sup> is represented by the formula:



5

wherein: R<sup>17</sup> to R<sup>24</sup> are as defined for R<sup>1</sup> and R<sup>2</sup>, or two or more adjacent radicals R<sup>17</sup> to R<sup>24</sup>, including R<sup>20</sup> and R<sup>21</sup>, together with the atoms connecting them form one or more rings;

10 M<sup>2</sup> is one or more carbons, silicon, germanium or tin;

R<sup>8</sup>, R<sup>10</sup> and R<sup>12</sup> are identical or different and have the meanings stated for R<sup>4</sup> to R<sup>7</sup>; and

R<sup>9</sup> and R<sup>11</sup> are identical or different and are each primary, secondary or tertiary butyl groups.

15

Claim 2. The compound of claim 1 wherein R<sup>3</sup> are identical C<sub>1</sub>-C<sub>4</sub> alkyl groups.

Claim 3. The compound of claim 1 wherein R<sup>3</sup> are identical C<sub>3</sub> alkyl groups.

20

Claim 4. The compound of claim 1 wherein  $R^4$  to  $R^7$  are hydrogen atoms.

Claim 5. The compound of claim 1 wherein  $R^4$  to  $R^7$  and  $R^{14}$  to  $R^{16}$  are hydrogen atoms.

5

Claim 6. The compound of claim 1 wherein  $R^9$  and  $R^{11}$  are both tertiary butyl groups.

Claim 7. The compound of claim 1 wherein  $R^4$  to  $R^7$  and  $R^{14}$  to  $R^{16}$  are hydrogen atoms and  $R^9$  and  $R^{11}$  are both tertiary butyl groups.

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Claim 8. A catalyst composition comprising the reaction product of the compound of claim 1 and a cocatalyst.

Claim 9. The catalyst composition of claim 8 wherein the cocatalyst comprises one or more non-coordinating anion activators.

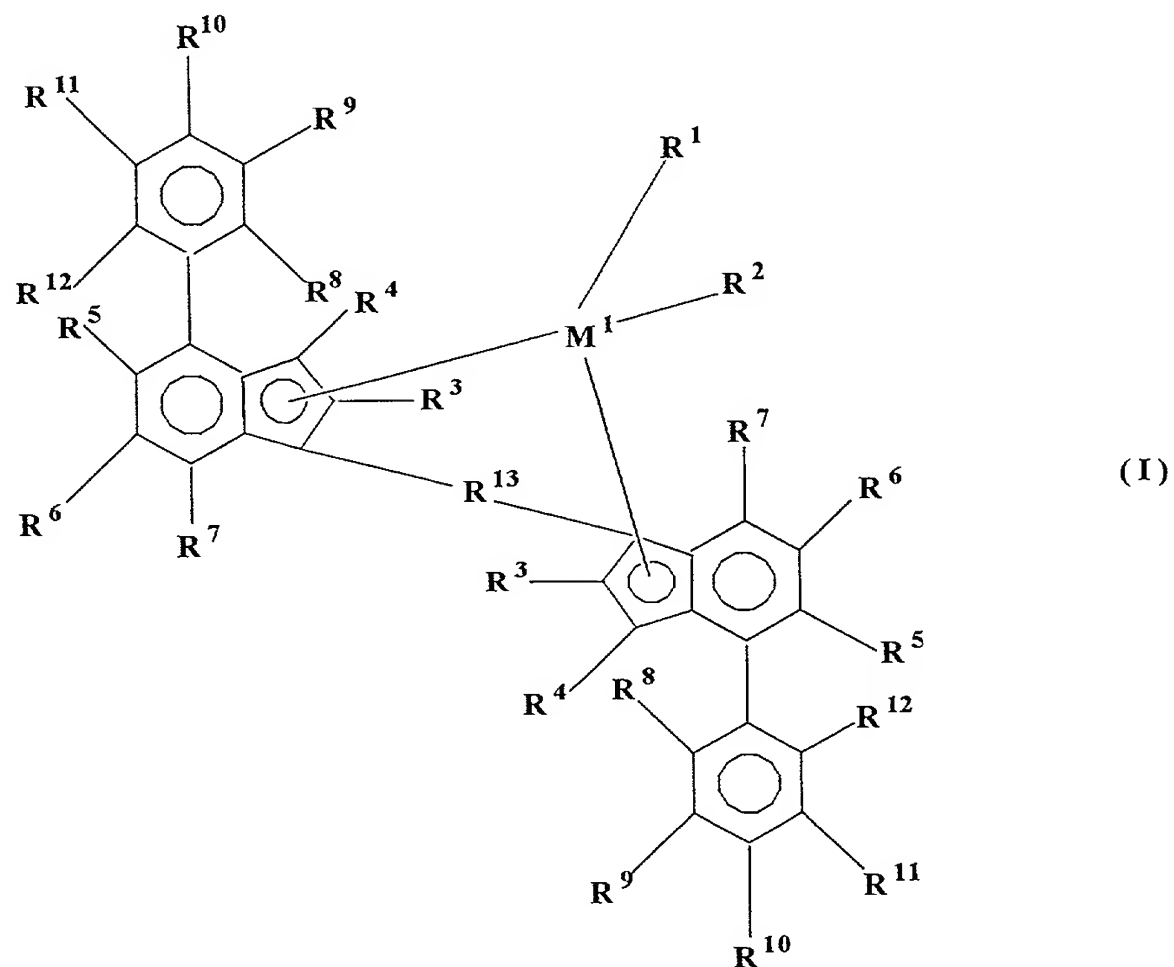
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Claim 10. The catalyst composition of claim 8 wherein the cocatalyst comprises one or more alkylalumoxane activators.

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Claim 11. The catalyst composition of claim 8 wherein the cocatalyst comprises a non-coordinating anion activator and an alkylalumoxane activator.

Claim 12. A compound represented by the formula:



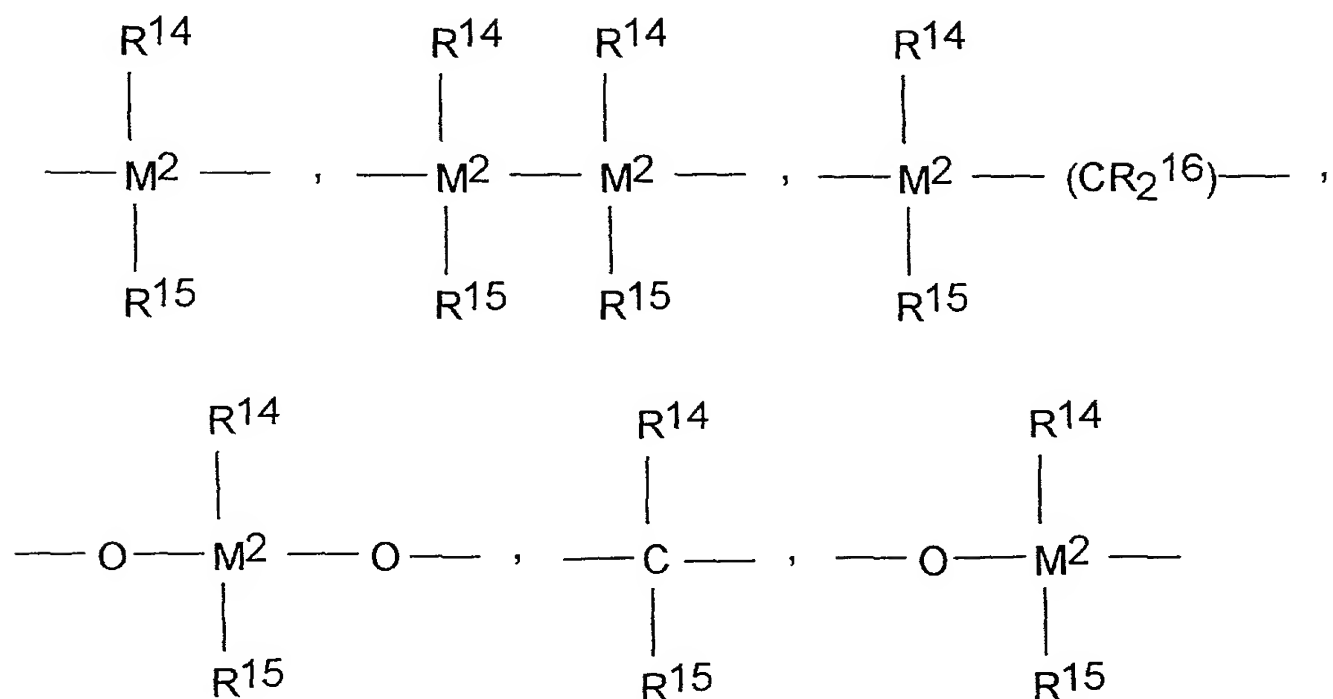
5            wherein:  $M^1$  is selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum and tungsten;

10            $R^1$  and  $R^2$  are identical or different, and are one of a hydrogen atom, a  $C_1$ - $C_{10}$  alkyl group, a  $C_1$ - $C_{10}$  alkoxy group, a  $C_6$ - $C_{10}$  aryl group, a  $C_6$ - $C_{10}$  aryloxy group, a  $C_2$ - $C_{10}$  alkenyl group, a  $C_2$ - $C_{40}$  alkenyl group, a  $C_7$ - $C_{40}$  arylalkyl group, a  $C_7$ - $C_{40}$  alkylaryl group, a  $C_8$ - $C_{40}$  arylalkenyl group, an OH group or a halogen atom, or a conjugated diene which is optionally substituted with one or more hydrocarbyl, tri(hydrocarbyl)silyl groups or hydrocarbyl, tri(hydrocarbyl)silylhydrocarbyl groups, said diene having up to 30 atoms not counting hydrogen;

15            $R^3$  are identical and are each a  $C_1$  or  $C_2$  alkyl group, a  $C_3$  alkyl group or a  $C_4$ - $C_{10}$  alkyl group;

$R^4$  to  $R^7$  are identical or different and are hydrogen, as defined for  $R^3$  or two or more adjacent radicals  $R^5$  to  $R^7$  together with the atoms connecting them form one or more rings;

$R^{13}$  is

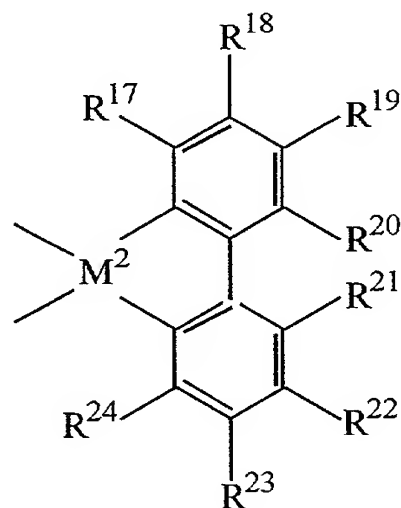


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$-B(R^{14})-$ ,  $-Al(R^{14})-$ ,  $-Ge-$ ,  $-Sn-$ ,  $-O-$ ,  $-S-$ ,  $-SO-$ ,  $-SO_2-$ ,  $-N(R^{14})-$ ,  $-CO-$ ,  $-P(R^{14})-$ ,  
or  $-P(O)(R^{14})-$ , or an amidoborane radical;

wherein:  $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are identical or different and are a hydrogen  
atom, a halogen atom, a  $C_1$ - $C_{20}$  alkyl group, a  $C_1$ - $C_{20}$  fluoroalkyl or silaalkyl  
group, a  $C_6$ - $C_{30}$  aryl group, a  $C_6$ - $C_{30}$  fluoroaryl group, a  $C_1$ - $C_{20}$  alkoxy group,  
a  $C_2$ - $C_{20}$  alkenyl group, a  $C_7$ - $C_{40}$  arylalkyl group, a  $C_8$ - $C_{40}$  arylalkenyl group,  
a  $C_7$ - $C_{40}$  alkylaryl group, or  $R^{14}$  and  $R^{15}$ , together with the atoms binding them,  
form a cyclic ring;

or,  $R^{13}$  is represented by the formula:



wherein:  $R^{17}$  to  $R^{24}$  are as defined for  $R^1$  and  $R^2$ , or two or more adjacent  
 5 radicals  $R^{17}$  to  $R^{24}$ , including  $R^{20}$  and  $R^{21}$ , together with the atoms connecting  
 them form one or more rings;

$M^2$  is one or more carbons, silicon, germanium or tin;

$R^8$ ,  $R^{10}$  and  $R^{12}$  are identical or different and have the meanings stated  
 for  $R^4$  to  $R^7$ ; and

10  $R^9$  and  $R^{11}$  are identical or different and are each primary, secondary or  
 tertiary butyl groups.

Claim 13. The compound of claim 12 wherein  $R^4$  to  $R^7$  are hydrogen atoms.

15 Claim 14. The compound of claim 12 wherein  $R^4$  to  $R^7$  and  $R^{14}$  to  $R^{16}$  are  
 hydrogen atoms.

Claim 15. The compound of claim 12 wherein  $R^3$  are both  $C_3$  alkyl groups  
 and  $R^9$  and  $R^{11}$  are both tertiary butyl groups.

20

Claim 16. The compound of claim 12 wherein  $R^4$  to  $R^7$  and  $R^{14}$  to  $R^{16}$  are  
 hydrogen atoms and  $R^9$  and  $R^{11}$  are both tertiary butyl groups.

Claim 17. A catalyst composition comprising the reaction product of the compound of claim 1 and a cocatalyst.

Claim 18. The catalyst composition of claim 17 wherein the cocatalyst  
5 comprises one or more non-coordinating anion activators.

Claim 19. The catalyst composition of claim 17 wherein the cocatalyst comprises one or more alkylalumoxane activators.

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